

Draft abstract for Bryan Duncan's invited survey talk on "Tropospheric composition satellite measurement for model evaluation and process studies".

Title: The strengths and limitations of satellite data for evaluating tropospheric processes in chemistry-climate models

There is now a wealth of satellite data products available with which to evaluate a model's simulation of tropospheric composition and other model processes. All of these data products have their strengths and limitations that need to be considered for this purpose. For example, uncertainties are introduced into a data product when 1) converting a slant column to a vertical column and 2) estimating the amount of a total column of a trace gas (e.g., ozone, nitrogen dioxide) that resides in the troposphere. Oftentimes, these uncertainties are not well quantified and the satellite data products are not well evaluated against in situ observations. However, these limitations do not preclude us from using these data products to evaluate our model processes if we understand these strengths and limitations when developing diagnostics. I will show several examples of how satellite data products are being used to evaluate particular model processes with a focus on the strengths and limitations of these data products. In addition, I will introduce the goals of a newly formed team to address issues on the topic of "satellite data for improved model evaluation and process studies" that is established in support of the IGAC/SPARC Global Chemistry-Climate Modeling and Evaluation Workshop.